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Question Paper Code : 10185

M.E./M.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

First Semester

Applied Electronics

AP 5191 — EMBEDDED SYSTEM DESIGN

(Common to M.E. Digital Signal Processing/M.E. Software Engineering/
M.E. VLSI Design)

(Regulation 2017)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. List some applications of embedded systems.

2. What is FSMD?

3. What is reaction timer?

4. Write the function of UART.

5. List the two types of protocol control methods.

6. What is IrDA?

7. List the types of transitions of PSM.

8. What is monitor in synchronization?

9. List the embedded software development tools.

10. What is the need of C extensions for embedded systems?

PART B — (5 × 13 = 65 marks)

11. (a) Explain design challenges on optimizing design metrics. (13)

Or

(b) Discuss on RT-level combinational components. (13)

12. (a) (i) Explain pipelining with an example. (7)

(ii) Explain the software development process with neat diagram. (6)

Or

(b) Explain the following:

(i) ASIP (6)

(ii) LCD controller. (7)

13. (a) (i) Draw the ISA bus protocol for standard I/O and explain. (7)

(ii) Discuss on Daisy-chain arbitration with neat diagram. (6)

Or

(b) Explain I^2C protocol with its bus structure. (13)

14. (a) (i) Explain finite-state machine with datapath model. (7)

(ii) Write the general template for capturing a state machine in a sequential programming language. (6)

Or

(b) Explain the concurrent process model with an example. (13)

15. (a) Explain debugging tools for embedded systems. (13)

Or

(b) How to design a Real-Time Operating System (RTOS)? Explain with an example. (13)

PART C — (1 × 15 = 15 marks)

16. (a) Briefly explain how data transaction is carried out using CAN Bus with neat sketches. Also draw the CAN data frame format and explain. (15)

Or

(b) Design the synchronized Producer-Consumer problem using monitors. (15)